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10/041,597	01/10/2002	Hironobu Yamakawa	500.41074X00	5097

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EXAMINER

DIAMOND, ALAN D

ART UNIT PAPER NUMBER

1753

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/041,597

Applicant(s)

YAMAKAWA ET AL.

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 0204.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 10 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Comments

1. The Examiner acknowledges that Figure 3 has been provided with the label "Related Art". According to the Remarks filed October 7, 2004 (Page 19), Figure 3 is an abstract representation of the art prepared by Applicant in an effort to illustrate Applicant's discovery of problems plagued in the art; and that this discovery is itself, together with Applicant's abstraction of the art represented by Figure 3, part of Applicant's invention. If Figure 3 is the problem that Applicant discovered, then it need not be labeled prior art. The "Related Art" heading on Figure 3 is acceptable to the Examiner.
2. The objection to Figure 8 has been overcome by Applicant's amendment of the figure, other than the objection set forth below.
3. The Examiner agrees that x1, x2, and x3 at page 17, line 18, of the specification refer to example lengths and thus, need not be present in the figures.
4. The objection to the specification has been overcome by Applicant's amendment thereof, other than the objection set forth below.
5. The 35 USC 112, second paragraph, rejection of claims 1-11 set forth on pages 3-4 of the Office action mailed 06/04/2004, has been overcome by Applicant's amendment of the claims.
6. The indication of allowable subject matter in claims 1-9 and 11 is withdrawn in view of the newly discovered references relied upon below. Rejections based on the newly cited references follow.

Drawings

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference sign 2100 in Figure 8. Please note that the Replacement Sheet for Figure 8 filed October 7, 2004 still has reference sign 2100. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. The disclosure is objected to because of the following informalities: On page 8, at line 11, the word "an" should be changed to "a". On page 8, at line 28, the term "mage" needs to be corrected. On page 9, at line 1, the term "palate" should be changed to "plate". Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 8, 11, 17, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is indefinite because "said ... female structures" at line 2 lacks positive antecedent support in claim 7. It is suggested that "said" be deleted from line 2 of claim 8.

Claim 11 is indefinite because "the outgoing window formed in the bottom surface of the planar plate" at lines 6-7 lacks positive antecedent support in claim 1. It is suggested that "bottom" be deleted from line 6 of claim 11.

Claim 17 is indefinite because "said ... female structures" at line 2 lacks positive antecedent support in claim 16. It is suggested that "said" be deleted from line 2 of claim 17.

Claim 20 is indefinite because "the outgoing window formed in the bottom surface of the planar plate" at line 6 lacks positive antecedent support in claim 2. It is suggested that "bottom" be deleted from line 6 of claim 20.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-8 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-288090, herein referred to as JP '090.

JP '090 teaches an electrophoresis apparatus comprising a planar plate (14,15) having capillary channels (20-21) formed therein for electrophoretic separation, a light irradiating means (3) for irradiating an excitation beam into a detection part in channel (20), and a fluorescent detecting means (35) for detecting a degree of fluorescence which is generated by a sample by the excitation beam (see the attached English abstract; Figure 1; and paragraphs 0005 to 0007). As seen in Figure 1, the channels (20,21) have what appear to be a rectangular cross-section. With respect to claim 1, the end of channel (22) which is closest to channel (20) encompasses the instant second flat and smooth incoming window formed in a surface of the planar plate. With respect to claim 2, the end of channel (22) which is closest to channel (20) encompasses the instant second incoming window formed in a surface of the planar plate. Alternatively, with respect to claim 2, the end of the channel (22) at the edge of the plate (14) reads on the instant second incoming window formed in a surface of the planar plate. With respect to claims 1 and 2, the portion of the side-wall of channel (20) that is near the end of the channel (22) reads on the instant first flat and smooth incoming window. Note that there is clearly an excitation transmission path between said side-wall of channel (20) and either said end of the channel (22) which is closest to the channel (20) or said end of the channel (22) at the edge of the plate (14). With respect to claims 1 and 2, when (14) and (15) are secured together (paragraph 0007), the lower surface of (15) is directly above channel (20) and below the detector (35), and

encompasses the instant first flat and smooth outgoing window. Furthermore, with respect to claims 1 and 2, when (14) and (15) are secured together (paragraph 0007), the upper surface of (15) opposite said lower surface of (15) and below the detector (35), encompasses the instant second flat and smooth outgoing window. Clearly, there is a fluorescent transmission path through (15), and thus, (15) is transparent, as per instant claims 3 and 12.

With respect to claims 4 and 13, JP '090's optical fiber (8) encompasses the instant light converging means (see paragraph 0007).

With respect to claims 5 and 14, JP '090's slit (36) encompasses the instant light splitting means (see paragraph 0008).

With respect to claims 6 and 15, JP '090's light filter (37) encompasses the instant spatial filter (see paragraph 0008).

With respect to claims 7, 8, 16, and 17, it is the Examiner's position that JP '090's plate (14,15) is essentially the same as that produced by the claimed product-by process.

JP '090 teaches the limitations of the instant claims other than the difference which is discussed below.

Looking at JP '090's Figure 1, the light enter through the side of the plate (14,15) and the fluorescence exits from the top of plate (14,15). However, according to claim 1, it would appear that light enters from the bottom, and the fluorescence exits from a side. However, "side", "top" and "bottom" are relative terms. When JP '090's case (1) in Figure 2 is turned on its side such that the light source (3) in Figure 1 is vertical (and

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facing up) rather than horizontal, then light enters from the bottom, and the fluorescence exits from a side. Alternatively, since the terms "side", "top" and "bottom" are relative, if one is looking at Figure 1 from the side, then the location of irradiating means (3) could be considered the bottom, and thus, the detector (35) would be on a side. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have turned JP '090's case (1) on its side to that the electrophoresis could be performed in a tight location requiring the case (1) to be turned in its side. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have looked at JP '090's apparatus from the side, and thus, consider the location of irradiating means (3) to be the bottom and the location of the detector (35) to be on a side wall because a skilled artisan can look at JP '090's apparatus any way he/she pleases.

According to claim 2, it would appear that light enters from the side, and the fluorescence exits from the bottom. However, as noted above "side", "top" and "bottom" are relative terms. When JP '090's case (1) in Figure 2 is turned upside down, the light still enters from the side, and then, the fluorescence exits from the bottom.

Alternatively, since the terms "side", "top" and "bottom" are relative, if one is upside down and looking at Figure 1, then the location of irradiating means (3) would still be considered the side, but, the detector (35) would be at the bottom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have turned JP '090's case (1) upside down so that the electrophoresis could be performed in a location requiring the case to be upside down. Alternatively, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to have been upside down while looking at JP '090's apparatus because a skilled artisan can look at JP '090's apparatus any way he/she pleases.

13. Claims 9, 11, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '090 as applied to claims 1-8 and 12-17 above, and further in view of Li (WO 00/06996).

JP '090, as relied upon for the reasons recited above, teaches the limitations of instant claims 9 and 18, the difference being that JP '090 does not specifically teach that its plate (14,15) can be made from a thermosetting resin. Li is relied upon for showing that such a plate for electrophoresis can be made from polymers, such as polydimethylsiloxane, which is thermosetting (see page 17, lines 7-14; and Figures 3A and 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared the plate (14,15) in JP '090's electrophoresis apparatus from a thermosetting polymer such as polydimethylsiloxane because polydimethylsiloxane is a known material for preparing such a plate, as taught by Li.

JP '090, as relied upon for the reasons recited above, teaches the limitations of instant claims 11 and 20, the difference being that JP '090 does not specifically teach plural of its channel (20) so that the light from the irradiating means (3) can pass through the plural channels at the same time. However, the use of multiple parallel channels, wherein the light from a source is irradiated on the channels at the same time is known in the art, as seen in Figures 1A, 3A, and 4-6 of Li. The use of multiple parallel channels provides the advantage that multiple samples can be analyzed at once (see

also page 11 of Li, which describes said Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used plural of JP '090's channel (20) in the plate (14,15) so that the light from the irradiating means (3) can pass through the plural channels at the same time, and thus, multiple samples can be analyzed at once, as shown by Li.

Allowable Subject Matter

14. Claims 10 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: Claims 10 and 19 are allowable because if there were multiple of JP '090's plates (14,15) in the apparatus, then there would at least have to be multiple of the irradiating means (3), i.e., one irradiating means (3) for each plate. Claims 10 and 19 require a plurality of the instant planar plates, such that a single excitation beam from the light irradiating means can be led through the channels in the planar plates layered one upon another.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 05-296978, JP 9-15205, and JP 9-288098 are hereby made of record.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-

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1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
December 9, 2004

Alan Diamond
Primary Examiner
Art Unit 1753

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.